

Brainstem (Midbrain and Pons)

Dental Neuroanatomy

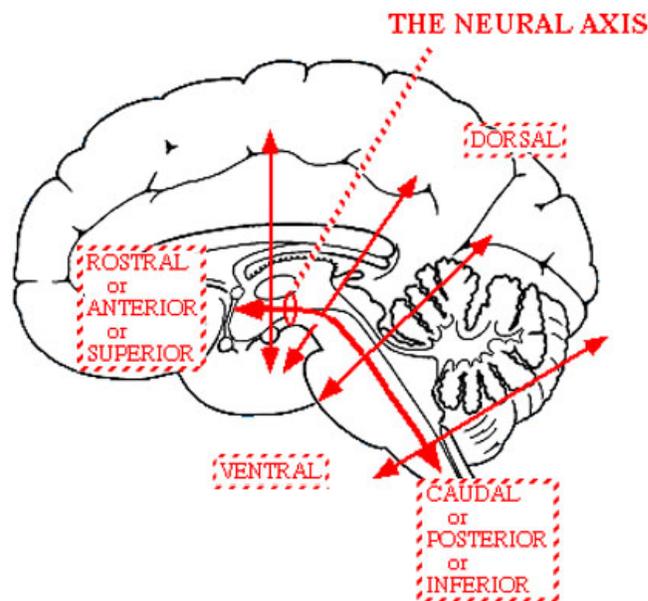
January 10th, 2013

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Notes: Please bring pencil crayons to class

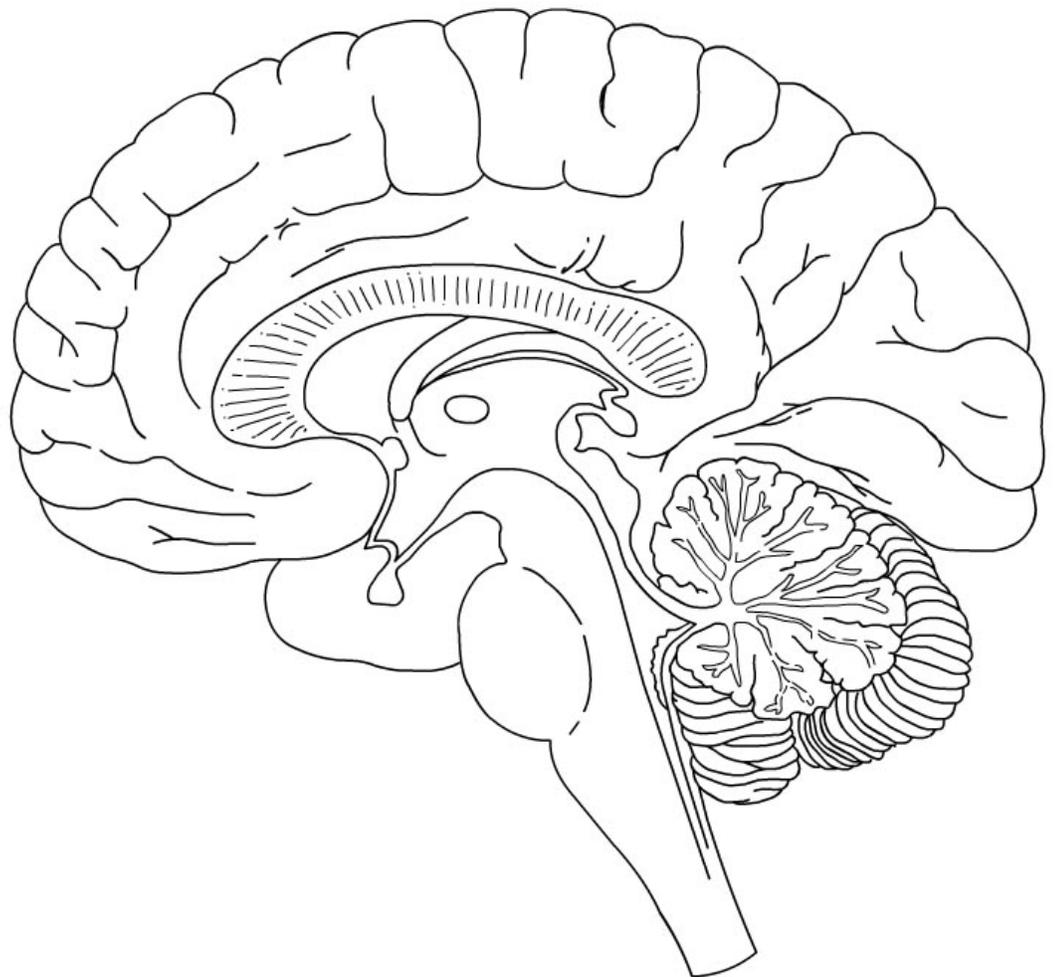
Objectives:

- Explain how spinal nerves differ from cranial nerves
- Name all the cranial nerves and know their components and functions
- Identify and locate the CN's associated with the medulla, pons and midbrain
- Recognize the major internal and external landmarks on the dorsal and ventral surface of the brain stem, so that you can determine if a gross or stained cross section is medulla, pons or midbrain.
- Identify on a typical cross section all the brain stem nuclei containing motor neurons that end on striated muscle.
- List the cranial nerves that contain parasympathetic fibers, the location of their nuclei, and their function
- Explain why cranial nerves are so important in localizing lesions.
- Name reflexes that test these nerves and brain stem levels.
- Relate branches of the vertebrobasilar blood supply to the medulla and pons explaining the deficits that would occur with vascular occlusion.



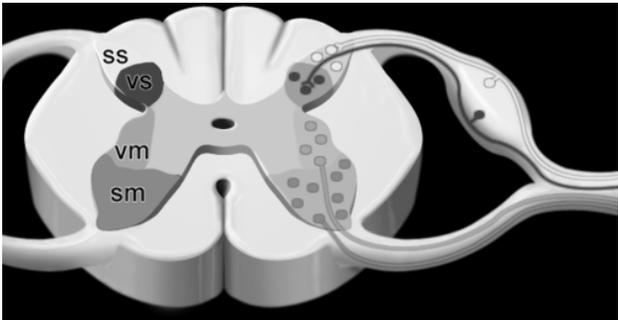
Brain overview

- Brainstem
 - Midbrain
 - Pons
 - Medulla
- Diencephalon
 - Thalamus
 - Hypothalamus
 - Pineal gland
- Corpus callosum
- Lateral ventricle
- 3rd ventricle
- Cerebral aqueduct
- 4th ventricle

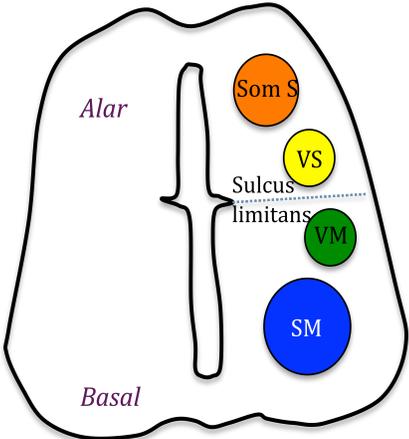


Brainstem nuclei overview

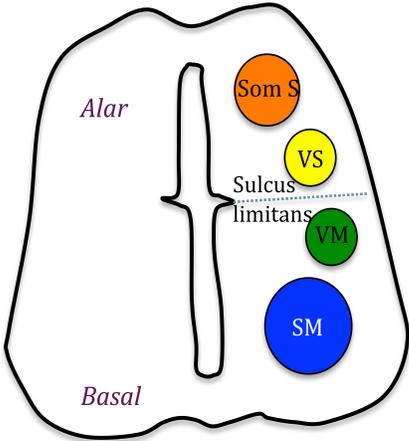
Spinal cord motor and sensory nuclei



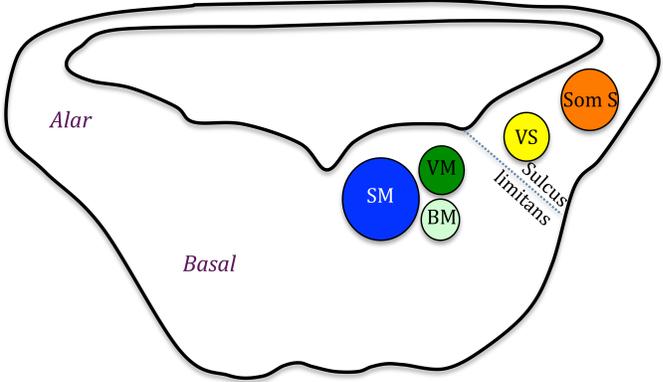
Spinal cord nuclei vs. Cranial nerve nuclei



Spinal cord



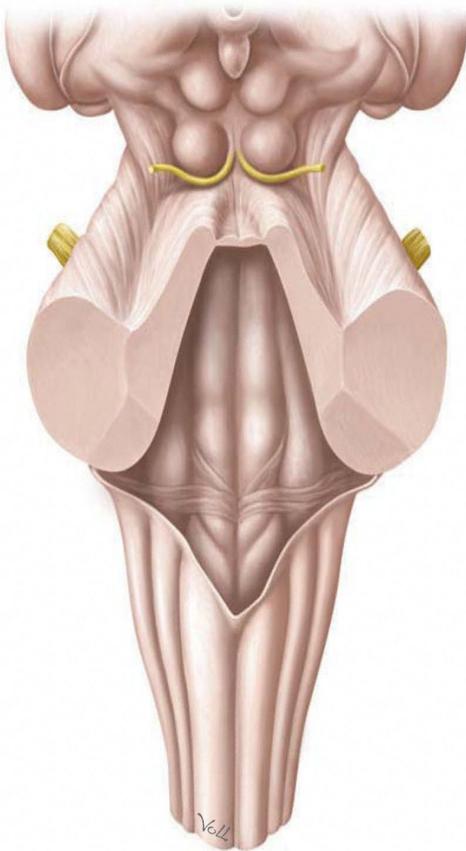
Spinal cord



Medulla

Midbrain (External anatomy)

- Quadrigeminal plate (tectum)
 - Superior colliculus (level of CN III)
 - Inferior colliculus (level of CN IV)
- Cerebral peduncles
- CN III. Oculomotor nerve
 - Somatic motor.
 - Visceral motor.
- CN IV. Trochlear nerve
 - Somatic motor.
 - Lesion of nerve



Brainstem (post view; cerebellum removed)



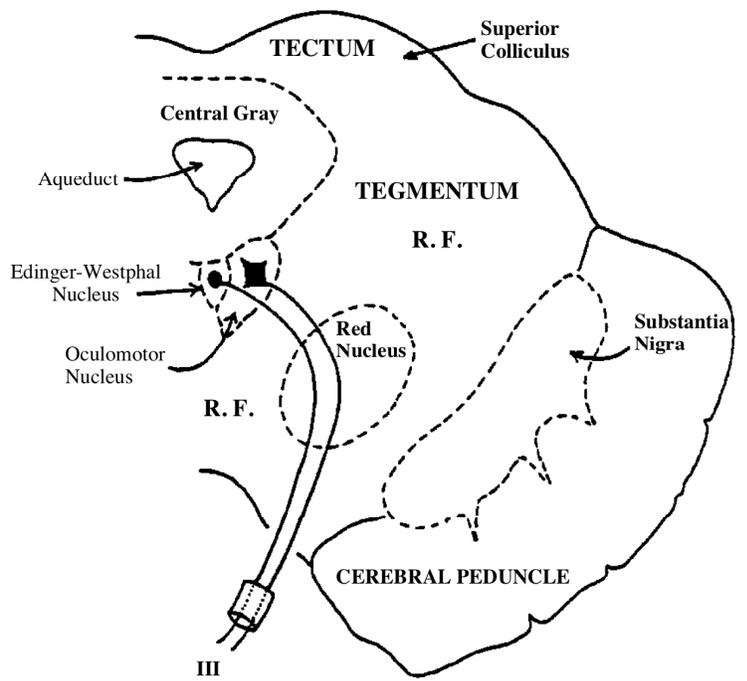
Rostral Midbrain (level of superior colliculus)



Caudal Midbrain (level of inferior colliculus)

Midbrain (Internal anatomy)

- Tectum
- Cerebral aqueduct
- Red nucleus
- Substantia nigra
- Cerebral peduncles
- Tegmentum
- Oculomotor nucleus
- Edinger-Westphal nucleus
- Functional significance



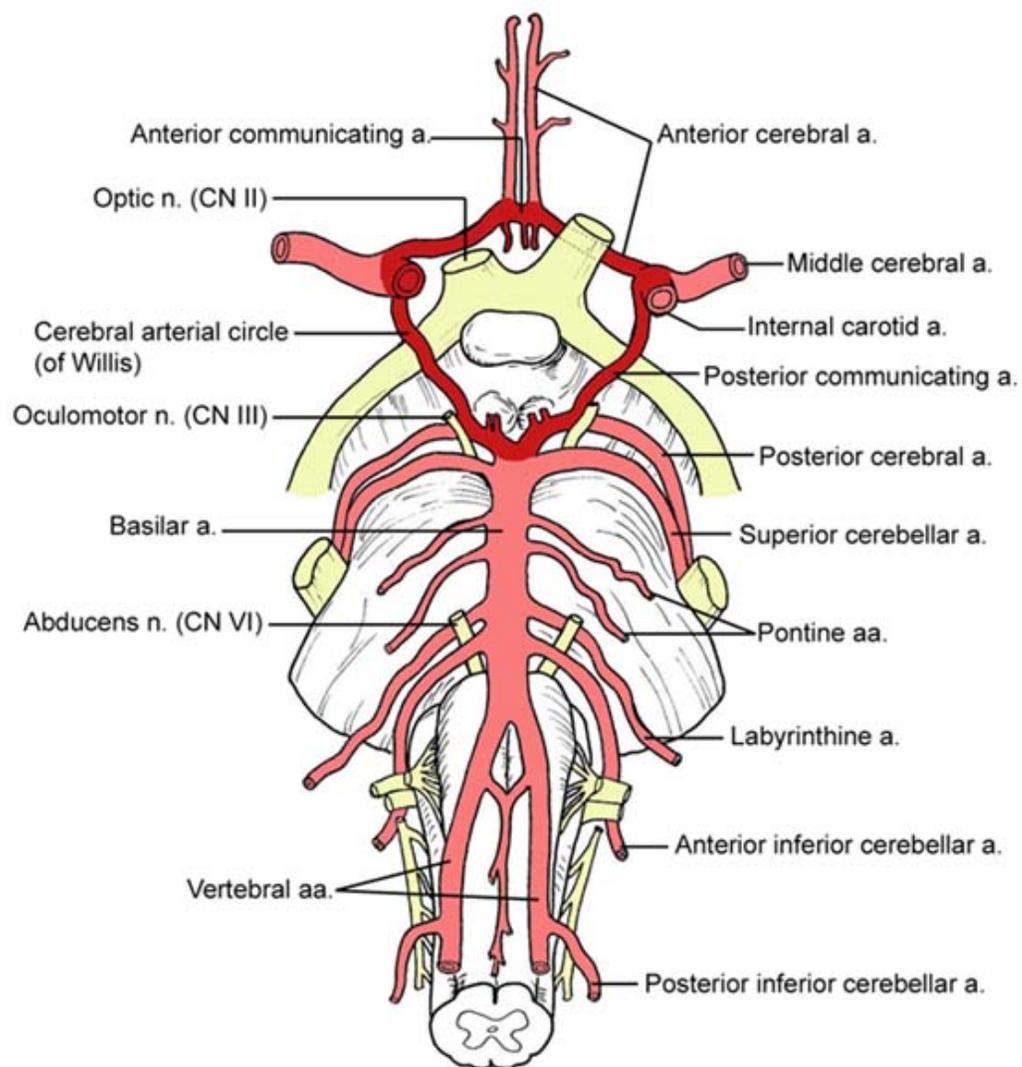
Rostral midbrain



Caudal midbrain

Midbrain (Arterial supply)

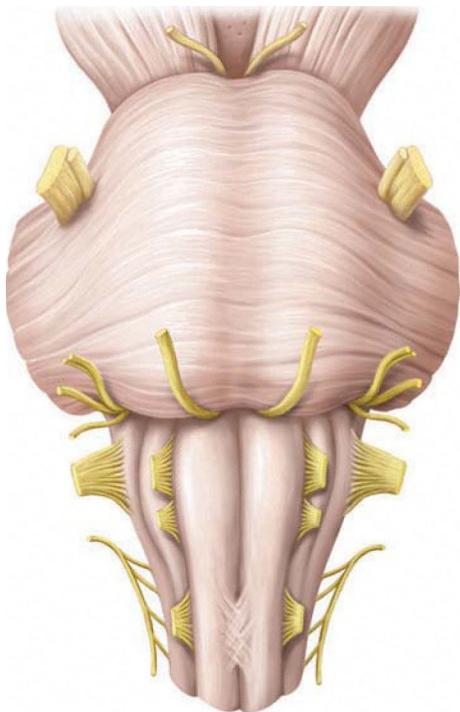
- Posterior cerebral artery branches
- Basilar artery branches



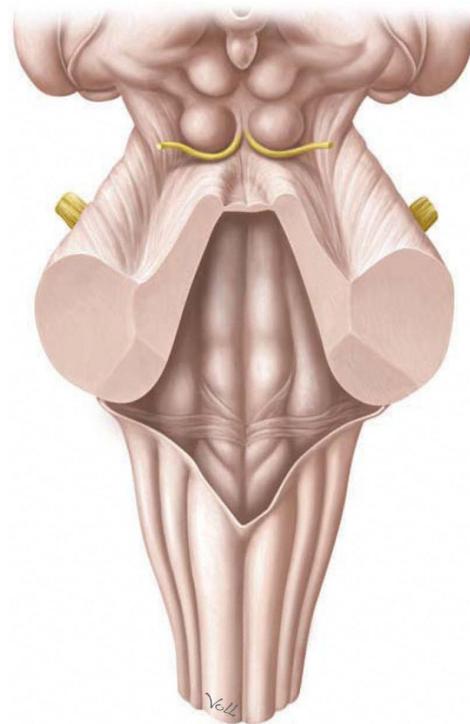
Arteries of the brain; inferior view of brain

Pons (External anatomy)

- Basilar pons (pons proper)
- Middle cerebellar peduncle
- Basilar artery
- 4th ventricle
- CN V
- CN VI
- CN VII
- CN VIII



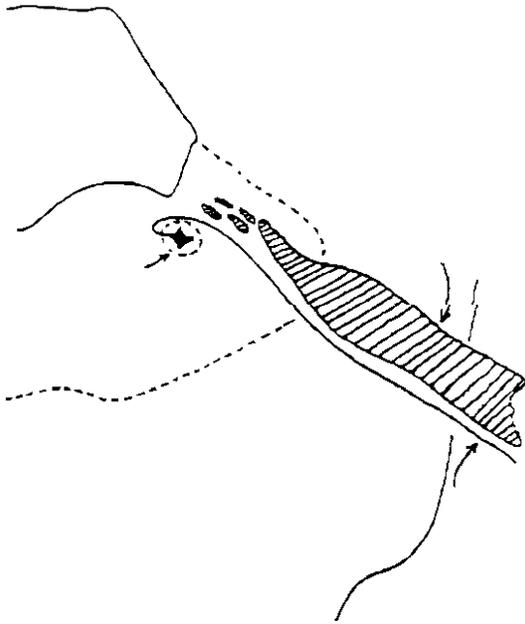
Ventral surface of brainstem



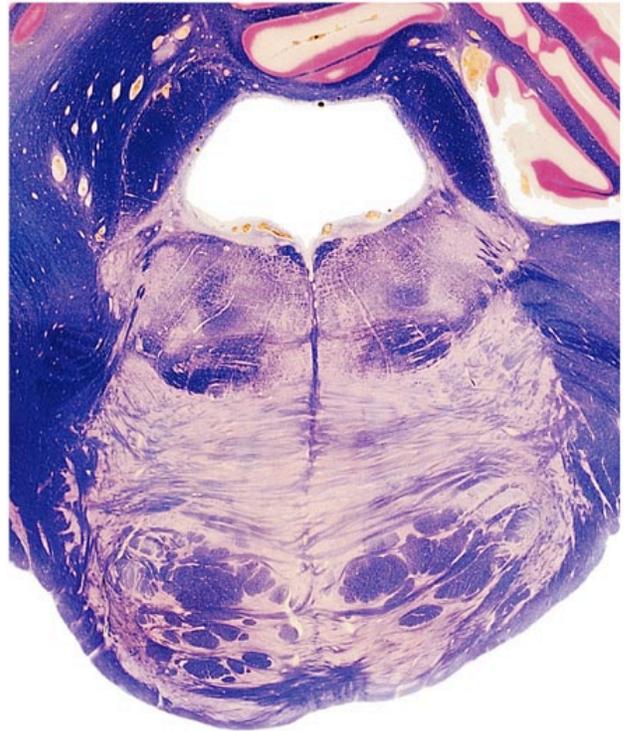
Dorsal surface of brainstem (cerebellum removed)

Mid/Rostral Pons (Internal anatomy)

- Trigeminal motor nucleus
- Functional significance



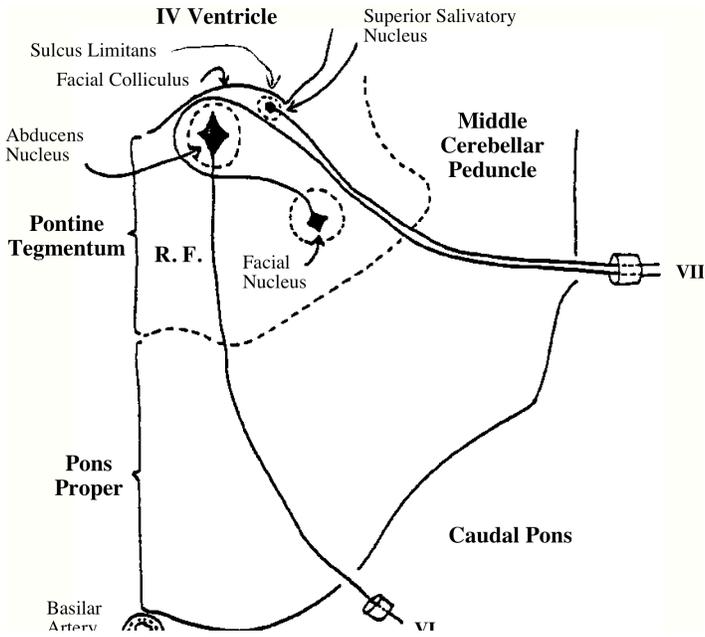
Mid/Rostral Pons



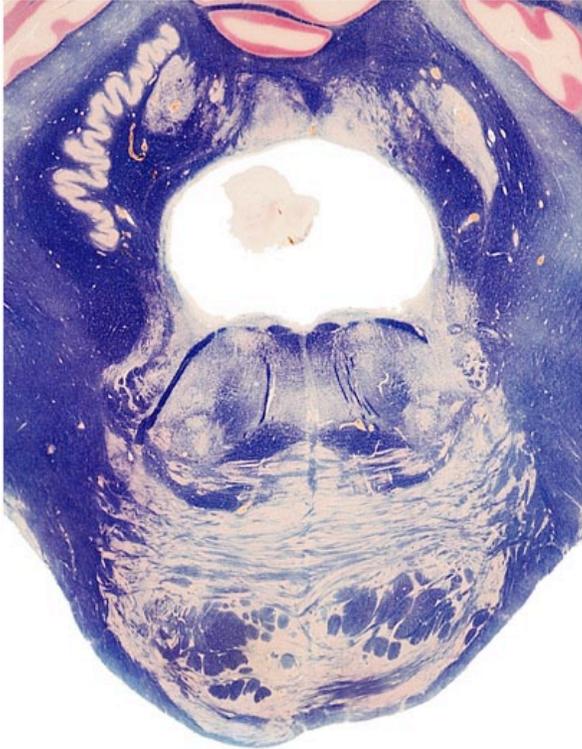
Mid/Rostral Pons

Caudal Pons (Internal anatomy)

- Facial nucleus
- Superior salivatory nucleus
- Abducens nucleus
- Functional significance



Caudal Pons



Caudal Pons

Pons (Arterial supply)

- Basilar artery
 - Median and circumferential branches

